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EXAMINER	
THOMPSON, JAMES A	
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/769,330	OHTA, KENICHI	
	Examiner	Art Unit	
	James A. Thompson	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 June 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☐ Claim(s) _____ is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,7,8,10-12 and 14-23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *26 January 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 16 June 2006 have been fully considered but they are not persuasive.

Regarding page 14, line 2 to page 16, line 15: As set forth on page 5, lines 15-25 of the previous office action, dated 05 January 2006 and mailed 12 January 2006, Sakai teaches converting the flag data in accordance with the designated magnification using logical arithmetic operating processes of said flag values (figure 13(S36) and column 8, lines 57-62 of Sakai). The partial image, which includes the attribute (flag) data (figure 10C of Sakai), is displayed at a specified magnification (column 8, lines 57-62 of Sakai). Therefore, said flag data is converted in accordance with the designated magnification since said flag data is directly associated with said partial image data. In other words, the flag data determines the structure of each of the partial images (figure 6 and column 6, lines 15-26 of Sakai) and is thus attached to each of the partial images. Therefore, if the partial images themselves are converted in accordance with a desired magnification, then the corresponding flag data is also converted in accordance with a desired magnification.

Regarding page 16, line 16 to page 17, line 7: Firstly, it is by the combination of Harrington with Sakai in view of Kanno and Azumaya that "a pixel converting method of said first pixel density converting means is different from a pixel converting method of said second pixel density converting means" is taught, as demonstrated on page 9, line 4 to page 10, line 2 of said previous office action. Since the nearest neighbor converting

means of Harrington used for the second pixel density converting means is different than the first pixel density converting means taught by Sakai, the disputed claim language is met by the combination of references.

Secondly, the disputed claim language with respect to the second pixel density converting means is also taught by the combination of Harrington with Sakai in view of Kanno and Azumaya, as set forth on page 8, line 17 to page 9, line 8 of said previous office action.

Regarding page 17, lines 8–11: Since the rejection of claim 1 is maintained and Applicant applies the same reasoning to claims 17 and 18, the rejections of claims 17 and 18 are also maintained.

Regarding page 17, line 12 to page 19, line 4: Applicant in this section proffers the same reasoning previously given for claim 1. As such, the rejection of claims 16, 19 and 20 are maintained for the same reasons provided above.

Regarding page 19, line 5 to page 20, line 9: Applicant in this section proffers the same reasoning previously given for claim 1. As such, the rejections of claims 21, 22 and 23 are maintained for the same reasons provided above.

Regarding page 20, line 10 to page 21, line 3: After a full consideration of Applicant's present arguments and the rejections previously set forth in said previous office action, Examiner considers the rejections to be adequate for the reasons set forth above. Thus, the rejections are maintained and the present action made final.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1, 7-8, 15 and 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakai (US Patent 6,735,740 B2) in view of Kanno (US Patent 5,260,810), Azumaya (US Patent 5,465,307), Harrington (US Patent 5,953,464), and Seki (US Patent 5,838,839).

Regarding claims 1, 17 and 18: Sakai discloses an image processing apparatus (figure 5 of Sakai). Further details of said apparatus are shown in figure 9 (column 3, lines 35-36 of Sakai), figures 24-26 (column 4, lines 7-14 of Sakai) and figure 32 of Sakai (column 4, lines 30-31 of Sakai).

Sakai further discloses input means (figure 32(65) and column 15, lines 13-17 of Sakai) for inputting image data (column 5, lines 27-30 of Sakai); means (figure 5(11) of Sakai) for obtaining flag data indicating an attribute (column 6, lines 15-18 of Sakai) of an image corresponding to the image data from the image data (figure 6 and column 6, lines 21-26 of Sakai); first pixel density converting means (figure 32(61(portion)) and column 15, lines 17-20 of Sakai) for pixel density converting the image data at a designated magnification (figure 13(S36) and column 8, lines 57-62 of Sakai); and second pixel density converting means (figure 32(61(portion)) and column 15, lines

17-20 of Sakai) for pixel density converting the flag data in accordance with the designated magnification using logical arithmetic operating processes of said flag values (figure 13 (S36) and column 8, lines 57-62 of Sakai). The partial image, which includes the attribute (flag) data (figure 10C of Sakai), is displayed at a specified magnification (column 8, lines 57-62 of Sakai). Therefore, said flag data is converted in accordance with the designated magnification since said flag data is directly associated with said partial image data.

Sakai further discloses output means (figure 5(14) of Sakai) for making a process of the pixel density converted image data (column 5, lines 40-45 of Sakai) different every pixel in accordance with the flag data (column 5, lines 47-53 of Sakai) and outputting the processed image data (column 5, lines 40-41 of Sakai).

Said first pixel density converting means and said second pixel density converting means correspond to the respective portions of the physically embodied computer software, executed by the CPU (figure 32(61) and column 15, lines 17-20 of Sakai), that perform the functions of said first pixel density converting means and said second pixel density converting means.

Sakai does not disclose expressly that said flag data is generated by a generating means and said flag data is generated with respect to each pixel of the image; that said image data input is color image data; that a pixel converting method of said first pixel density converting means is different from a pixel converting method of said second pixel density converting means; and that said second pixel density converting means performs a logical arithmetic operating process of flag values using a plurality of pixels near a target pixel when the

designated magnification is reduction, and performs a processing using a nearest neighboring pixel of the target pixel when the designated magnification is enlargement.

Kanno discloses generating means (figure 1(10) of Kanno) for generating data indicative of the attribute of an image corresponding to the image data (column 6, lines 35-38 and lines 40-45 of Kanno); and that said image data is color image data (column 9, lines 51-54 of Kanno).

Sakai is analogous art because Sakai and the present application are from the same field of endeavor, namely digital document processing, conversion, attribute flagging, and printing. Sakai and Kanno are combinable because they are from the same field of endeavor, namely digital document processing, conversion and printing. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to process color image data and generate the data indicative of the attributes of an image, as taught by Kanno, said indicative data being the flag data taught by Sakai. The motivation for doing so would have been that the value of the parameter used to determine the feature of the image region can be used in deter-mining the amount of correction required (column 6, lines 58-62 of Kanno). Therefore, it would have been obvious to combine Kanno with Sakai.

Sakai in view of Kanno does not disclose expressly that said flag data is generated with respect to each pixel of the image; that a pixel converting method of said first pixel density converting means is different from a pixel converting method of said second pixel density converting means; and that said second pixel density converting means performs a logical arithmetic operating process of flag values using a plurality of

pixels near a target pixel when the designated magnification is reduction, and performs a processing using a nearest neighboring pixel of the target pixel when the designated magnification is enlargement.

Azumaya discloses flag data that is generated with respect to each pixel of the image (figure 21 and column 14, lines 18-27 of Azumaya). As can clearly be seen in figure 21 of Azumaya, an attribute flag is generated for each individual pixel.

Sakai in view of Kanno is combinable with Azumaya because they are from the same field of endeavor, namely digital document processing, conversion and printing. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to generate the flag data specifically for each pixel, as taught by Azumaya. The suggestion for doing so would have been that the attribute flags can be processed in synchronism with buffered image data (column 14, lines 29-34 of Azumaya), thus improving the data processing flow speed. Therefore, it would have been obvious to combine Azumaya with Sakai in view of Kanno.

Sakai in view of Kanno and Azumaya does not disclose expressly that a pixel converting method of said first pixel density converting means is different from a pixel converting method of said second pixel density converting means; and that said second pixel density converting means performs a logical arithmetic operating process of flag values using a plurality of pixels near a target pixel when the designated magnification is reduction, and performs a processing using a nearest neighboring pixel of the target pixel when the designated magnification is enlargement.

Harrington discloses performing a logical arithmetic operating process of flag values using a nearest neighboring pixel of the target pixel when the designated magnification is enlargement (figures 4a-4d; figures 5a-5d; and column 5, lines 2-5 of Harrington). The filling in operation (column 5, lines 2-5 of Harrington) is based on the value of a nearest neighboring pixel, such as demonstrated in figures 4a-4d and figures 5a-5d of Harrington. For example, in figure 4b of Harrington, the pixel in the bottom right corner has a value of "1" and the pixel in the top left corner has a value of "0". Thus, when the resolution is increased in figure 5b of Harrington, a "0" is placed for the top left pixel among the four pixels in the bottom right corner, as shown in the figure below.

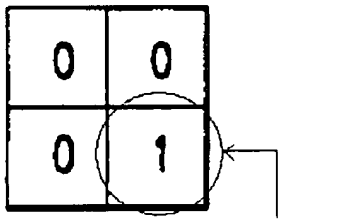

FIG.4B

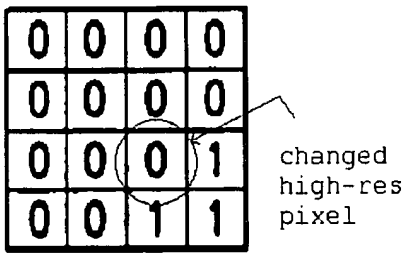

FIG.5B

Sakai in view of Kanno and Azumaya is combinable with Harrington because they are from the same field of endeavor, namely digital document processing, conversion and printing. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use a nearest neighbor pixel when enlarging the magnification of a digital image, as taught by Harrington, using said second pixel density converting means taught by Sakai. Thus, the pixel converting method of said first pixel density converting means is different from the pixel density converting method of said second pixel density converting means. The motivation for doing so would have been to help mitigate image artifacts, such as jagged edges (column 5, line 2 of Harrington). Therefore, it would have been obvious to combine Harrington with Sakai in view of Kanno and Azumaya.

Sakai in view of Kanno, Azumaya and Harrington does not disclose expressly that said second pixel density converting means performs a logical arithmetic operating process of flag values using a plurality of pixels near a target pixel when the designated magnification is reduction.

Seki discloses performing logical arithmetic processing using a plurality of pixels near a target pixel when the designated magnification is reduction (figure 2 and column 2, line 66 to column 3, line 3 of Seki).

Sakai in view of Kanno, Azumaya and Harrington is combinable with Seki because they are from the same field of endeavor, namely digital document processing and conversion. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use a plurality of pixels near a target pixel when reducing image magnification, as taught by Seki, using said second pixel density converting means taught by

Sakai. The suggestion for doing so would have been that the number of pixels are to be decreased for a lower magnification image and thus local neighborhood data must be used for a scaled down image (column 2, lines 53-63 of Seki). Therefore, it would have been obvious to combine Seki with Sakai in view of Kanno, Azumaya and Harrington to obtain the invention as specified in claims 1, 17 and 18.

Further regarding claim 17: The apparatus of claim 1 performs the method of claim 17.

Further regarding claim 18: The apparatus of claim 1 performs processing using physically embodied computer software (column 15, lines 38-45 of Sakai) and thus performs the steps of the computer program of claim 18.

Further regarding claim 7: Kanno discloses that said generating means generates the flag data (column 6, lines 40-45 of Kanno) on the basis of a change (ΔD_{max}) in image data of a pixel near a target pixel (column 6, lines 35-40 of Kanno).

Regarding claim 8: Sakai in view of Kanno and Azumaya does not disclose expressly that said first pixel density converting means uses one of a linear interpolating method and bicubic spline interpolation.

Harrington discloses using linear interpolation for changing image resolution (column 4, lines 25-27 of Harrington).

Sakai in view of Kanno and Azumaya is combinable with Harrington because they are from the same field of endeavor, namely digital document processing, conversion and printing. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use linear interpolation in said first pixel density converting means. The motivation for doing so would have been to reduce blocky artifacts (column

4, lines 18-21 of Harrington). Therefore, it would have been obvious to combine Harrington with Sakai in view of Kanno and Azumaya to obtain the invention as specified in claim 8.

Regarding claim 15: Sakai discloses that said second pixel density converting means makes a converting method different in accordance with attributes of said flag data (column 8, lines 52-57 of Sakai).

4. Claims 2-4 and 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakai (US Patent 6,735,740 B2) in view of Kanno (US Patent 5,260,810), Azumaya (US Patent 5,465,307), Harrington (US Patent 5,953,464), Seki (US Patent 5,838,839), and Okubo (US Patent 5,392,137).

Regarding claim 2: Sakai discloses that said flag data is a character flag indicative of a character image, and a figure flag indicative of a figure image (column 4, lines 49-54 of Sakai).

Sakai in view of Kanno, Azumaya, Harrington and Seki does not disclose expressly a mesh flag indicative of a mesh image.

Okubo discloses detecting whether or not a pixel is in a mesh image region (column 7, lines 26-29 of Okubo) and storing data indicating whether or not said pixel is in a mesh image region (column 7, lines 29-32 of Okubo).

Sakai in view of Kanno, Azumaya, Harrington and Seki is combinable with Okubo because they are from the same field of endeavor, namely digital document processing and conversion. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to include an indicator corresponding to a mesh image region, as taught by Okubo, said indicator being a flag in the set of flag data taught by Sakai. The

motivation for doing so would have been to correct for image artifact problems that affect a mesh image region of an image (column 2, lines 60-64 of Okubo). Therefore, it would have been obvious to combine Okubo with Sakai in view of Kanno, Azumaya, Harrington and Seki to obtain the invention as specified in claim 2.

Regarding claim 3: Sakai in view of Kanno, Azumaya, Harrington and Seki does not disclose expressly that when said flag data is a character flag, said output means performs a sharpness emphasis to said image data.

Okubo discloses that, for edges such as characters (column 10, lines 1-5 of Okubo), a filtering process is performed (column 9, lines 53-57 of Okubo), said filtering process being sharpness emphasis (column 4, lines 6-9 of Okubo).

Sakai in view of Kanno, Azumaya, Harrington and Seki is combinable with Okubo because they are from the same field of endeavor, namely digital document processing and conversion. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to sharpen character image data, as taught by Okubo. The motivation for doing so would have been to keep the outlines of small characters clear (column 10, lines 2-5 of Okubo). Therefore, it would have been obvious to combine Okubo with Sakai in view of Kanno, Azumaya, Harrington and Seki to obtain the invention as specified in claim 3.

Regarding claim 4: Sakai in view of Kanno and Azumaya does not disclose expressly that, when said flag data is a mesh flag, said output means performs a low pass filter process to said image data.

Harrington discloses smoothing image data with a low pass filter (column 4, lines 47-50 of Harrington).

Sakai in view of Kanno and Azumaya is combinable with Harrington because they are from the same field of endeavor, namely digital document processing, conversion and printing. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use a low pass filter to smooth data, as taught by Harrington. The motivation for doing so would have been to produce a smoother effect for the image data (column 4, lines 49-50 of Harrington). Therefore, it would have been obvious to combine Harrington with Sakai in view of Kanno and Azumaya.

Sakai in view of Kanno, Azumaya, Harrington and Seki does not disclose expressly that, when said flag data is a mesh flag, said output means performs a low pass filter process to said image data.

Okubo discloses detecting whether or not a pixel is in a mesh image region (column 7, lines 26-29 of Okubo) and storing data indicating whether or not said pixel is in a mesh image region (column 7, lines 29-32 of Okubo). Further, Okubo teaches that mesh image regions can be processed through a smoothing filter (column 1, lines 46-49 of Okubo) to eliminate undesired characteristics (column 1, lines 38-42 of Okubo).

Sakai in view of Kanno, Azumaya, Harrington and Seki is combinable with Okubo because they are from the same field of endeavor, namely digital document processing and conversion. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to include an indicator corresponding to a mesh image region, as taught by Okubo, said indicator being a flag in the set of flag data taught by Sakai. Further, if said indicator indicates a mesh region, a smoothing filter is applied, as taught by Okubo, using the low-pass filter

taught by Harrington as the specific type of smoothing filter. The motivation for doing so would have been to correct for image artifact problems that affect a mesh image region of an image (column 1, lines 38-42 of Okubo). Therefore, it would have been obvious to combine Okubo with Sakai in view of Kanno, Azumaya, Harrington and Seki to obtain the invention as specified in claim 4.

Regarding claim 10: Sakai discloses that said output means makes a binarization process to the image data different in accordance with the flag data (column 8, lines 55-59 of Sakai).

Regarding claim 11: Sakai does not disclose expressly that, when said flag data is the character flag or figure flag, an error diffusion process is performed to the image data.

Kanno discloses performing error diffusion on image data when said image data is a character or figure (line image) (column 5, lines 55-60 of Kanno).

Sakai is analogous art because Sakai and the present application are from the same field of endeavor, namely digital document processing, conversion, attribute flagging, and printing. Sakai and Kanno are combinable because they are from the same field of endeavor, namely digital document processing, conversion and printing. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to perform error diffusion based the image region being a character or figure region, as taught by Kanno. The motivation for doing so would have been to preserve the resolution of the characters and/or lines of the figures (column 5, lines 58-60 of Kanno). Therefore, it would have been obvious to combine Kanno with Sakai to obtain the invention as specified in claim 11.

5. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sakai (US Patent 6,735,740 B2) in view of Kanno (US Patent 5,260,810), Azumaya (US Patent 5,465,307), Harrington (US Patent 5,953,464), Seki (US Patent 5,838,839), and Ishikawa (US Patent 5,729,664).

Regarding claim 12: Sakai in view of Kanno, Azumaya, Harrington and Seki does not disclose expressly that said output means changes color conversion coefficients in accordance with the flag data and performs a color converting process of the image data.

Ishikawa discloses changing the color conversion coefficients (column 10, lines 29-35 of Ishikawa) in accordance with flag data (column 10, lines 18-23 of Ishikawa) and performing a color converting process of the image data (column 10, lines 47-52 of Ishikawa).

Sakai in view of Kanno, Azumaya, Harrington and Seki is combinable with Ishikawa because they are from the same field of endeavor, namely digital document processing and conversion. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to perform the color conversion processing of the image data in accordance with the flag data, as taught by Ishikawa. Since color conversion is performed to create the output, said color conversion would be performed by said output means. The motivation for doing so would have been to be able to convert between a plurality of different color spaces (column 3, lines 9-14 of Ishikawa), such as the color spaces for each different type of image data. Therefore, it would have been obvious to combine Ishikawa with Sakai in view of Kanno, Azumaya, Harrington and Seki to obtain the invention as specified in claim 12.

6. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sakai (US Patent 6,735,740 B2) in view of Kanno (US Patent 5,260,810), Azumaya (US Patent 5,465,307), Harrington (US Patent 5,953,464), Seki (US Patent 5,838,839), and Sekine (US Patent 5,719,967).

Regarding claim 14: Sakai in view of Kanno, Azumaya, Harrington and Seki does not disclose expressly that, in the case where said input means inputs data described by a page description language from a computer, said generating means generates the flag data on the basis of attribute information of the page description language.

Sekine discloses using page description language for the image data (column 6, lines 56-57 of Sekine), detecting the attributes stored in said page description language (column 6, lines 56-60 of Sekine), and supplying said attributes to an image processing apparatus (column 6, lines 60-62 of Sekine).

Sakai in view of Kanno, Azumaya, Harrington and Seki is combinable with Sekine because they are from the same field of endeavor, namely digital image data processing. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use page description language as the input data and provide attribute data from the page description language data, as taught by Sekine, said attribute data being provided as the flag data taught by Sakai. The motivation for doing so would have been to be able to provide both the image data and the attribute data at once (column 6, lines 60-62 of Sekine), instead of having to compute the flag data from the image data. Therefore, it would have been obvious to combine Sekine with Sakai in view of Kanno, Azumaya, Harrington and Seki to obtain the invention as specified in claim 14.

7. Claims 16 and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakai (US Patent 6,735,740 B2) in view of Kanno (US Patent 5,260,810), Azumaya (US Patent 5,465,307) and Okubo (US Patent 5,392,137).

Regarding claims 16, 19 and 20: Sakai discloses an image processing apparatus (figure 5 of Sakai). Further details of said apparatus are shown in figure 9 (column 3, lines 35-36 of Sakai), figures 24-26 (column 4, lines 7-14 of Sakai) and figure 32 of Sakai (column 4, lines 30-31 of Sakai).

Sakai further discloses input means (figure 32(65) and column 15, lines 13-17 of Sakai) for inputting image data (column 5, lines 27-30 of Sakai); means (figure 5(11) of Sakai) for obtaining flag data indicating an attribute (column 6, lines 15-18 of Sakai) of an image corresponding to the image data from the image data (figure 6 and column 6, lines 21-26 of Sakai), the flag data indicative of a character, a figure or a mesh (column 5, lines 21-24 and column 6, lines 20-26 of Sakai); first pixel density converting means (figure 32(61(portion)) and column 15, lines 17-20 of Sakai) for pixel density converting the image data at a designated magnification (figure 13(S36) and column 8, lines 57-62 of Sakai); and second pixel density converting means (figure 32(61(portion)) and column 15, lines 17-20 of Sakai) for pixel density converting the flag data in accordance with the designated magnification using logical arithmetic operating processes of said flag values (figure 13 (S36) and column 8, lines 57-62 of Sakai). The partial image, which includes the attribute (flag) data (figure 10C of Sakai), is displayed at a specified magnification (column 8, lines 57-62 of Sakai). Therefore, said flag data is converted in accordance

with the designated magnification since said flag data is directly associated with said partial image data.

Sakai further discloses output means (figure 5(14) of Sakai) for making a process of the pixel density converted image data (column 5, lines 40-45 of Sakai) different every pixel in accordance with the flag data (column 5, lines 47-53 of Sakai) and outputting the processed image data (column 5, lines 40-41 of Sakai), wherein said second pixel density converting means makes a converting method different in accordance with attributes of the flag data (column 8, lines 55-62 of Sakai). The converting method will be different for different flag data, such as the partial image priority, since the reduction ratios for each partial image will be different depending on the value of said flag data (column 8, lines 55-62 of Sakai).

Said first pixel density converting means and said second pixel density converting means correspond to the respective portions of the physically embodied computer software, executed by the CPU (figure 32(61) and column 15, lines 17-20 of Sakai), that perform the functions of said first pixel density converting means and said second pixel density converting means.

Sakai does not disclose expressly that said flag data is generated by a generating means and said flag data is generated with respect to each pixel of the image; that said image data input is color image data; and that said second pixel density converting means performs a logical arithmetic operating process of flag values using a plurality of pixels near a target pixel when the flag data is indicative of the character of the figure, and performs a processing using a nearest neighboring pixel of the target pixel when the flag data is indicative of the mesh.

Kanno discloses generating means (figure 1(10) of Kanno) for generating data indicative of the attribute of an image corresponding to the image data (column 6, lines 35-38 and lines 40-45 of Kanno); and that said image data is color image data (column 9, lines 51-54 of Kanno).

Sakai is analogous art because Sakai and the present application are from the same field of endeavor, namely digital document processing, conversion, attribute flagging, and printing. Sakai and Kanno are combinable because they are from the same field of endeavor, namely digital document processing, conversion and printing. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to process color image data and generate the data indicative of the attributes of an image, as taught by Kanno, said indicative data being the flag data taught by Sakai. The motivation for doing so would have been that the value of the parameter used to determine the feature of the image region can be used in determining the amount of correction required (column 6, lines 58-62 of Kanno). Therefore, it would have been obvious to combine Kanno with Sakai.

Sakai in view of Kanno does not disclose expressly that said flag data is generated with respect to each pixel of the image; and that said second pixel density converting means performs a logical arithmetic operating process of flag values using a plurality of pixels near a target pixel when the flag data is indicative of the character of the figure, and performs a processing using a nearest neighboring pixel of the target pixel when the flag data is indicative of the mesh.

Azumaya discloses flag data that is generated with respect to each pixel of the image (figure 21 and column 14, lines 18-27

of Azumaya). As can clearly be seen in figure 21 of Azumaya, an attribute flag is generated for each individual pixel.

Sakai in view of Kanno is combinable with Azumaya because they are from the same field of endeavor, namely digital document processing, conversion and printing. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to generate the flag data specifically for each pixel, as taught by Azumaya. The suggestion for doing so would have been that the attribute flags can be processed in synchronism with buffered image data (column 14, lines 29-34 of Azumaya), thus improving the data processing flow speed. Therefore, it would have been obvious to combine Azumaya with Sakai in view of Kanno.

Sakai in view of Kanno and Azumaya does not disclose expressly that said second pixel density converting means performs a logical arithmetic operating process of flag values using a plurality of pixels near a target pixel when the flag data is indicative of the character of the figure, and performs a processing using a nearest neighboring pixel of the target pixel when the flag data is indicative of the mesh.

Okubo discloses performing a logical arithmetic operating process using a plurality of pixels near a target pixel when the flag data is indicative of the character of the figure (figure 18C; column 6, lines 40-45 and lines 54-63 of Okubo), and performing a processing using a nearest neighboring pixel of the target pixel when the flag data is indicative of the mesh (figure 18A; column 6, lines 37-39; and column 7, lines 29-35 of Okubo). In the case of a figure (i.e. a high level of edges and characters), the mixing filter is used (figure 18C; column 6, lines 40-45 and lines 54-63 of Okubo). As can clearly be seen

from figure 18C of Okubo, the processing the target pixel with the mixing filter uses the plurality of pixels near the target pixel. In the case of a mesh, the first filtering part is used to perform a processing using a particular filter (figure 18A; column 6, lines 37-39; and column 7, lines 29-35 of Okubo). As can clearly be seen from figure 18A of Okubo, said filter uses a nearest neighboring pixel of the target pixel in the processing since the pixel immediately above, below, to the left, and to the right of the target pixel are all nearest neighboring pixels.

Sakai in view of Kanno and Azumaya is combinable with Okubo because they are from the same field of endeavor, namely digital document processing and conversion. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to perform filtering based on region characteristics in the manner taught by Okubo, but using attribute flags, as taught by Sakai. The motivation for doing so would have been to better reproduce an image based on the level of sharp edges in each particular region (column 2, line 60 to column 3, line 2 of Okubo). Therefore, it would have been obvious to combine Okubo with Sakai in view of Kanno and Azumaya to obtain the invention as specified in claims 16, 19 and 20.

Further regarding claim 19: The apparatus of claim 16 performs the method of claim 19.

Further regarding claim 20: The apparatus of claim 16 performs processing using physically embodied computer software (column 15, lines 38-45 of Sakai) and thus performs the steps of the computer program of claim 20.

8. Claims 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakai (US Patent 6,735,740 B2) in view of Kanno (US Patent 5,260,810) and Frederic (US Patent 6,005,989).

Regarding claims 21, 22 and 23: Sakai discloses an image processing apparatus (figure 5 of Sakai). Further details of said apparatus are shown in figure 9 (column 3, lines 35-36 of Sakai), figures 24-26 (column 4, lines 7-14 of Sakai) and figure 32 of Sakai (column 4, lines 30-31 of Sakai).

Sakai further discloses input means (figure 32(65) and column 15, lines 13-17 of Sakai) for inputting image data (column 5, lines 27-30 of Sakai); means (figure 5(11) of Sakai) for obtaining flag data indicating an attribute (column 6, lines 15-18 of Sakai) of an image corresponding to the image data from the image data (figure 6 and column 6, lines 21-26 of Sakai); first pixel density converting means (figure 32(61(portion)) and column 15, lines 17-20 of Sakai) for pixel density converting the image data at a designated magnification (figure 13(S36) and column 8, lines 57-62 of Sakai); and second pixel density converting means (figure 32(61(portion)) and column 15, lines 17-20 of Sakai) for pixel density converting the flag data in accordance with the designated magnification (figure 13(S36) and column 8, lines 57-62 of Sakai). The partial image, which includes the attribute (flag) data (figure 10C of Sakai), is displayed at a specified magnification (column 8, lines 57-62 of Sakai). Therefore, said flag data is converted in accordance with the designated magnification since said flag data is directly associated with said partial image data.

Sakai further discloses output means (figure 5(14) of Sakai) for making a process of the pixel density converted image data (column 5, lines 40-45 of Sakai) different every pixel in

accordance with the flag data (column 5, lines 47-53 of Sakai) and outputting the processed image data (column 5, lines 40-41 of Sakai).

Said first pixel density converting means and said second pixel density converting means correspond to the respective portions of the physically embodied computer software, executed by the CPU (figure 32(61) and column 15, lines 17-20 of Sakai), that perform the functions of said first pixel density converting means and said second pixel density converting means.

Sakai does not disclose expressly that said first pixel density converting means gives an offset to a start position of an output pixel position so that an output pixel value after pixel density converting the image data is generated by interpolation calculation between the neighboring adjacent pixels; that said flag data is generated by a generating means; and that said image data input is color image data.

Kanno discloses generating means (figure 1(10) of Kanno) for generating data indicative of the attribute of an image corresponding to the image data (column 6, lines 35-38 and lines 40-45 of Kanno); and that said image data is color image data (column 9, lines 51-54 of Kanno).

Sakai is analogous art because Sakai and the present application are from the same field of endeavor, namely digital document processing, conversion, attribute flagging, and printing. Sakai and Kanno are combinable because they are from the same field of endeavor, namely digital document processing, conversion and printing. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to process color image data and generate the data indicative of the attributes of an image, as taught by Kanno, said indicative data

being the flag data taught by Sakai. The motivation for doing so would have been that the value of the parameter used to determine the feature of the image region can be used in determining the amount of correction required (column 6, lines 58-62 of Kanno). Therefore, it would have been obvious to combine Kanno with Sakai.

Sakai in view of Kanno does not disclose expressly that said first pixel density converting means gives an offset to a start position of an output pixel position so that an output pixel value after pixel density converting the image data is generated by interpolation calculation between the neighboring adjacent pixels.

Frederic discloses giving an offset (r_k, r_l) to a start position of an output pixel position ($M_{k,l}$) (figure 2 and column 5, lines 27-32 of Frederic) so that an output pixel value after pixel density converting the image data is generated by interpolation calculation between the neighboring adjacent pixels (column 5, lines 32-38 of Frederic).

Sakai in view of Kanno is combinable with Frederic because they are from the same field of endeavor, namely digital image data processing and conversion. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to increase the image resolution by giving an offset for the interpolated pixel and generating the pixel value by interpolating between the neighboring adjacent pixels, as taught by Frederic, using the first pixel density converting means taught by Sakai. The motivation for doing so would have been to be able to sample the image data at any intermediate position, thus restoring the nuances between adjacent original pixels (column 2, lines 14-18 of Frederic). Therefore, it would have been

obvious to combine Frederic with Sakai in view of Kanno to obtain the invention as specified in claims 21, 22 and 23.

Further regarding claim 22: The apparatus of claim 21 performs the method of claim 22.

Further regarding claim 23: The apparatus of claim 21 performs processing using physically embodied computer software (column 15, lines 38-45 of Sakai) and thus performs the steps of the computer program of claim 23.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James A. Thompson whose telephone number is 571-272-7441. The examiner can normally be reached on 8:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David K. Moore can be

reached on 571-272-7437. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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21 August 2006

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